



AMPAK

WSDB-741

Setup Guide

Rev. 0.1

1. WLAN Function HW Setup Guide

Physical hardware configuration likes as figure1. Please follow the following procedure step by step to get starting WLAN and Bluetooth function.

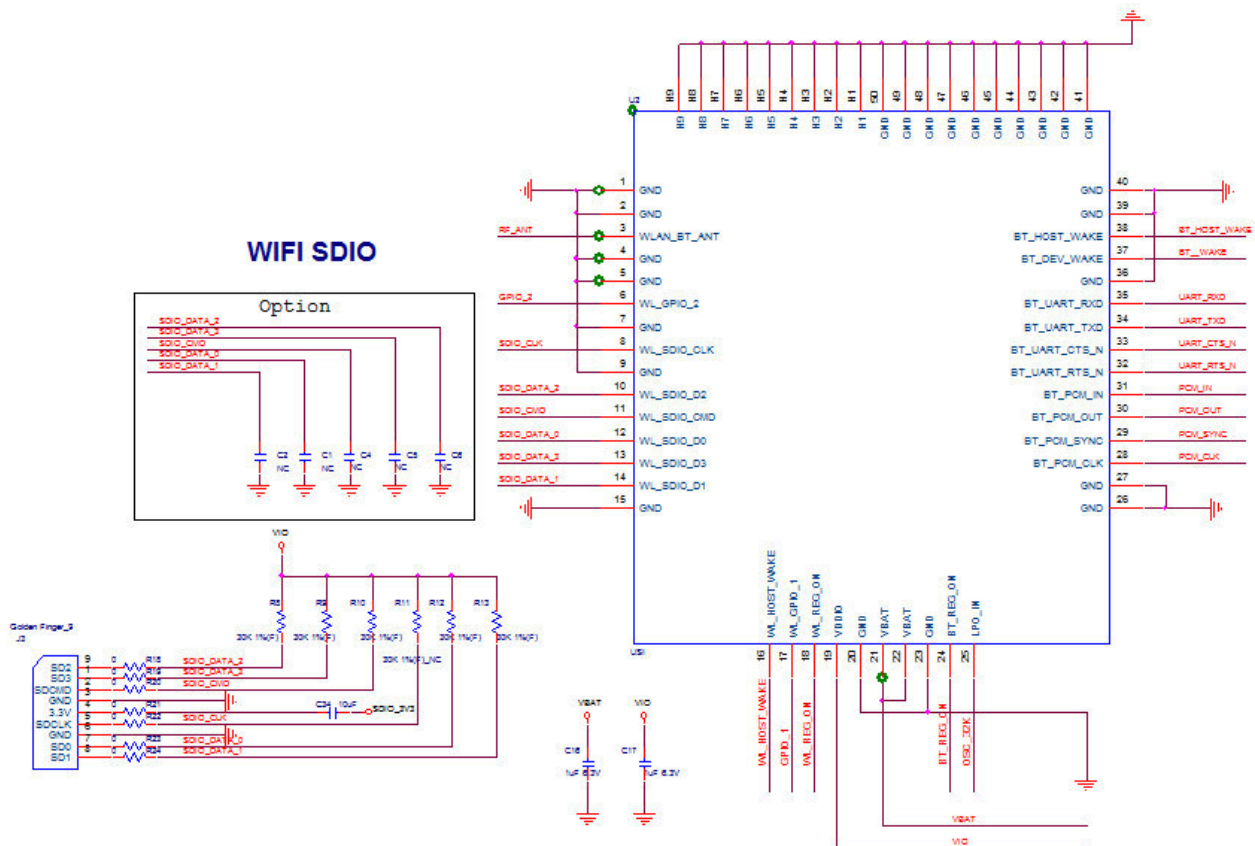


Pin Assignment

PIN	NAME	TYPE	DESCRIPTION
1	GND	G	Ground connections
2	GND	G	Ground connections
3	RF_ANT	I/O	RF I/O Port (Option)
4	GND	G	Ground connections
5	GND	G	Ground connections
6	WL_GPIO2	I/O	WLAN GPIO2(Internal 10K PD)
7	GND	G	Ground connections
8	SDIO_DATA_CLK	I/O	SDIO clock line
9	GND	G	Ground connections
10	SDIO_DATA_2	I/O	SDIO data line 2
11	SDIO_DATA_CMD	I/O	SDIO command line
12	SDIO_DATA_0	I/O	SDIO data line 0
13	SDIO_DATA_3	I/O	SDIO data line 3
14	SDIO_DATA_1	I/O	SDIO data line 1
15	GND	G	Ground connections

16	WL_HOST_WAKE (WL_GPIO_0)	O	WLAN to wake-up HOST
17	WL_GPIO1	I/O	WLAN GPIO1(Internal 10K PD)
18	WL_REG_ON	I	Internal regulators power enable/disable Chip has an internal default 200k Ohm pull-down resistor. It can be disabled through programming.
19	VDDIO	P	I/O Voltage supply input
20	GND	G	Ground connections
21	VBAT	P	Main power voltage source input
22	VBAT	P	Main power voltage source input
23	GND	G	Ground connections
24	BT_REG_ON	I	Internal regulators power enable/disable Chip has an internal default 200k Ohm pull-down resistor. It can be disabled through programming.
25	LPO_IN	I	External Low Power Clock input (32.768KHz)
26	GND	G	Ground connections
27	GND	G	Ground connections
28	PCM_CLK	I/O	PCM clock
29	PCM_SYNC	I/O	PCM sync signal
30	PCM_OUT	O	PCM Data output
31	PCM_IN	I	PCM data input
32	UART_RTS_N	O	Bluetooth UART interface
33	UART_CTS_N	I	Bluetooth UART interface
34	UART_TXD	O	Bluetooth/FM UART interface
35	UART_RXD	I	Bluetooth/FM UART interface
36	GND	G	Ground connections
37	BT_DEV_WAKE UP	I	HOST wake-up Bluetooth device
38	BT_HOST_WAKE	O	Bluetooth device to wake-up HOST
39-50	GND	G	Ground connections
H1~H9	GND	G	BOT GND PAD (with open 9 solder mask)

Application Schematic

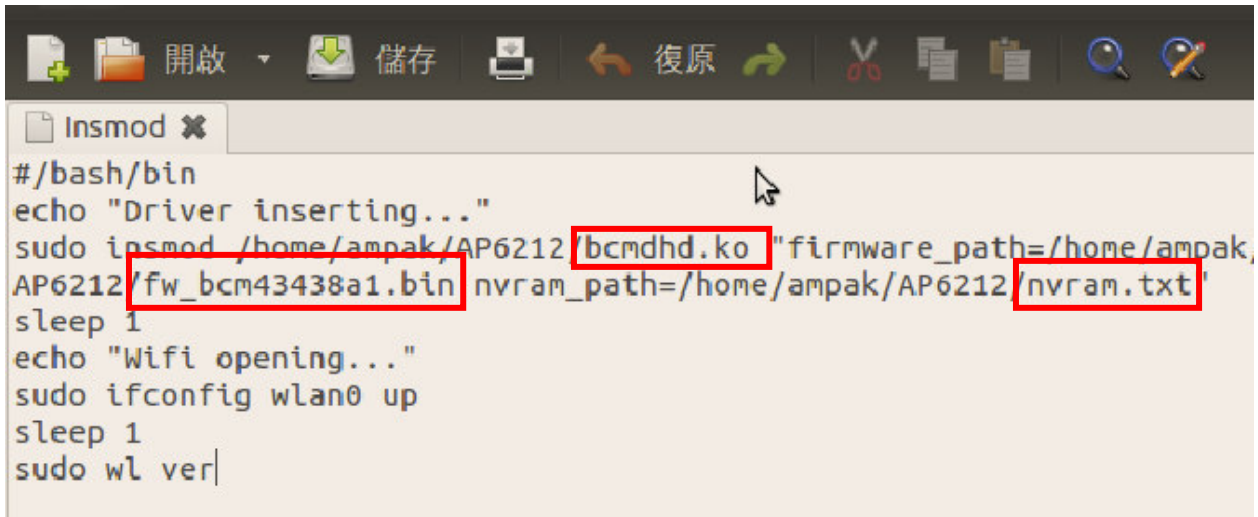


1. Software wi-fi setup:(Ubuntu 12.04 LTS kernel Linux3.4.0)

1-1.Put four files in the select document.

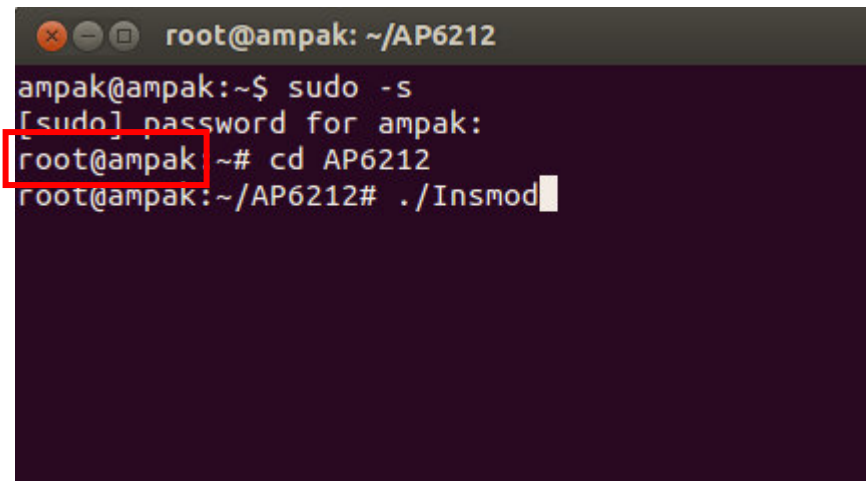
1. bcmhdh.ko
2. Fw.bin
3. Nvram.txt
- 4.Insmo

1-2. You have to marked the path of three files.



```
#/bash/bin
echo "Driver inserting..."
sudo insmod /home/ampak/AP6212/bcmdhd.ko "firmware_path=/home/ampak,
AP6212/fw_bcm43438a1.bin nvram_path=/home/ampak/AP6212/nvram.txt"
sleep 1
echo "Wifi opening..."
sudo ifconfig wlan0 up
sleep 1
sudo wl ver|
```

1-3.Enter "sudo -s" to root.



```
root@ampak: ~/AP6212
ampak@ampak:~$ sudo -s
[sudo] password for ampak:
root@ampak:~# cd AP6212
root@ampak:~/AP6212# ./Insmode
```

1-4.Change directory to the select document.

```
root@ampak: ~/AP6212
ampak@ampak:~$ sudo -s
[sudo] password for ampak:
root@ampak:~# cd AP6212
root@ampak:~/AP6212# ./Insmod
```

1-5. Enter “./Insmod” to execute the file Insmod.

```
root@ampak: ~/AP6212
ampak@ampak:~$ sudo -s
[sudo] password for ampak:
root@ampak:~# cd AP6212
root@ampak:~/AP6212# ./Insmod
```

1-6. It will show the message means success.

```
root@ampak: ~/AP6212
ampak@ampak:~$ sudo -s
[sudo] password for ampak:
root@ampak:~# cd AP6212
root@ampak:~/AP6212# ./Insmod
Driver inserting...
Wifi opening...
6.37 RC32.0
wl0: Jan 28 2015 10:03:34 version 7.10.323.50 (r529740 WLTEST) FWID 01-ef5bb70a
root@ampak:~/AP6212#
```

2. Software Bluetooth setup:(Ubuntu 12.04 LTS kernel Linux3.2.0)



2-1. Change directory to document “brcm_patchram_plus”

```
root@ampak: ~/brcm_patchram_plus/usb/ur/brcm_patchram_plus
ampak@ampak:~$ sudo -s
[sudo] password for ampak:
root@ampak:~# cd /home/ampak/brcm_patchram_plus/usb/ur/brcm_patchram_plus/
root@ampak:~/brcm_patchram_plus/usb/ur/brcm_patchram_plus#
```

2-2. Enter “./brcm_patchram_plus”.

```
root@ampak:~# cd /home/ampak/brcm_patchram_plus/usb/ur/brcm_patchram_plus/
root@ampak:~/brcm_patchram_plus/usb/ur/brcm_patchram_plus# ./brcm_patchram_plus
root@ampak:~/brcm_patchram_plus/usb/ur/brcm_patchram_plus# ./brcm_patchram_plus
root@ampak:~/brcm_patchram_plus/usb/ur/brcm_patchram_plus#
```

2-3. Enter “ls /dev/” and you will found the device “ttyUSB0”.

```

ampak@ampak:~$ sudo -s
[sudo] password for ampak:
root@ampak:~# cd /home/ampak/brcm_patchram_plus/usb/ur/brcm_patchram_plus/
root@ampak:~/brcm_patchram_plus/usb/ur/brcm_patchram_plus# ./brcm_patchram_plus
root@ampak:~/brcm_patchram_plus/usb/ur/brcm_patchram_plus# ls /dev/
aggart      mei         sda11      tty21      tty54      ttyS28
autofs      mem         sda12      tty22      tty55      ttyS29
block       net         sda2       tty23      tty56      ttyS3
bsg         network_latency sda3       tty24      tty57      ttyS30
btrfs-control network_throughput sda4       tty25      tty58      ttyS31
bus         null        sda5       tty26      tty59      ttyS4
char        oldmem      sda6       tty27      tty6       ttyS5
console     parport0    sda7       tty28      tty60      ttyS6
core        port        sda8       tty29      tty61      ttyS7
cpu         ppp         sda9       tty3       tty62      ttyS8
cpu_dna_latency psaux      sdb        tty30      tty63      ttyS9
disk        ptmx        sdb1       tty31      tty7       ttyUSB0
dri         pts         serial     tty32      tty8       uinput
ecryptfs    ram0        sg0        tty33      tty9       urandom
fb0         ram1        sg1        tty34      ttyprintk  usbmon0
fd          ram10       shm        tty35      tty50      usbmon1
full        ram11       snapshot   tty36      tty51      usbmon2
fuse        ram12       snd        tty37      ttyS10     usbmon3
fw0         ram13       stderr     tty38      ttyS11     usbmon4
hidraw0     ram14       stdin      tty39      ttyS12     vcs
hpet        ram15       stdout     tty4       ttyS13     vcs1
input       ram2        tty        tty40      ttyS14     vcs2
kmsg        ram3        tty0       tty41      ttyS15     vcs3
log         ram4        tty1       tty42      ttyS16     vcs4
loop0       ram5        tty10      tty43      ttyS17     vcs5
loop1       ram6        tty11      tty44      ttyS18     vcs6
loop2       ram7        tty12      tty45      ttyS19     vcsa
loop3       ram8        tty13      tty46      ttyS2       vcsa1
loop4       ram9        tty14      tty47      ttyS20     vcsa2
loop5       random      tty15      tty48      ttyS21     vcsa3
loop6       rfkill      tty16      tty49      ttyS22     vcsa4
loop7       rtc         tty17      tty5       ttyS23     vcsa5
loop-control rtc0        tty18      tty50      ttyS24     vcsa6
lp0         sda         tty19      tty51      ttyS25     vga_arbiter
mapper      sda1        tty2       tty52      ttyS26     watchdog
mcelog      sda10       tty20      tty53      ttyS27     zero
root@ampak:~/brcm_patchram_plus/usb/ur/brcm_patchram_plus#

```

3-3. Put the HCD file to the path ” /brcm_patchram_plus/ur/brcm_patchram_plus/” and enter
“./brcm_patchram_plus --enable_hci --no2bytes --tosleep 200000 --baudrate 115200
--patchram bcm43438a1.hcd /dev/ttyUSB0 -d” to download firmware.

```

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
dc 00 00
received 7
04 0e 04 01 4c fc 00
=====
writing
01 4c fc a9 87 65 0d 00 00 31 00 00 00 5d 00 00
00 06 00 00 00 5d 00 00 00 6c 02 00 00 03 80 00
00 d6 00 00 00 31 00 00 00 5d 00 00 00 06 00 00
00 5d 00 00 00 6c 02 00 00 01 80 00 00 d0 00 00
00 31 00 00 00 5d 00 00 00 06 00 00 00 10 00 00
00 5c 02 00 00 01 80 00 00 ca 00 00 00 31 00 00
00 5d 00 00 00 06 00 00 00 5d 00 00 00 4a 02 00
00 01 80 00 00 c4 00 00 00 31 00 00 00 5d 00 00
00 06 00 00 00 5d 00 00 00 44 02 00 00 01 80 00
00 be 00 00 00 31 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 44 02 00 00 01 80 00 00
received 7
04 0e 04 01 4c fc 00
=====
writing
01 4c fc 05 88 64 0d 00 01
received 7
04 0e 04 01 4c fc 00
=====
writing
01 4c fc 05 87 64 0d 00 01
received 7
04 0e 04 01 4c fc 00
=====
writing
01 4c fc 07 84 64 0d 00 06 04 00
received 7
04 0e 04 01 4c fc 00
=====
writing
01 4e fc 04 ff ff ff ff
received 7
04 0e 04 01 4e fc 00
Downloaded
writing
01 03 0c 00
writing
01 03 0c 00
received 7
04 0e 04 01 03 0c 00
Done setting reset
writing
01 18 fc 06 00 00 00 c2 01 00
received 7
04 0e 04 01 18 fc 00
Done setting baudrate
Done setting line discipline
Device setup complete

```



FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

RF exposure warning

The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment. The equipment must not be co-located or operating in conjunction with any other antenna or transmitter.



End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: W2Z-02100006 "and "Contains IC: 7736B-02100006"

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

- 1) This device is intended for OEM integrators only.
- 2) Please see the full Grant of Equipment document for other restrictions.

Canada, Industry Canada (IC) Notices

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Canada, avis d'Industry Canada (IC)

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

Radio Frequency (RF) Exposure Information

The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has been evaluated for and shown compliant with the IC Specific Absorption Rate ("SAR") limits when operated in portable exposure conditions.

Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie émise par l'appareil de sans fil est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce dispositif a été évalué pour et démontré conforme à la Taux IC d'absorption spécifique ("SAR") des limites lorsqu'il est utilisé dans des conditions d'exposition portatifs.